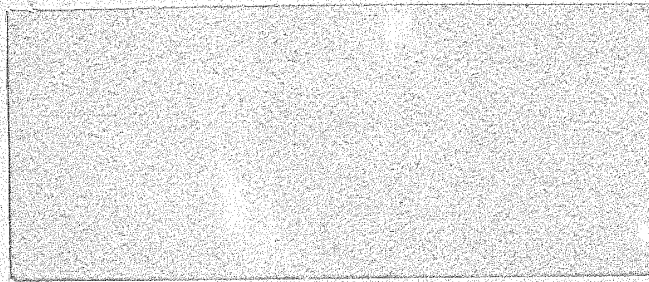


STAT



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Off Axis  
Collimator

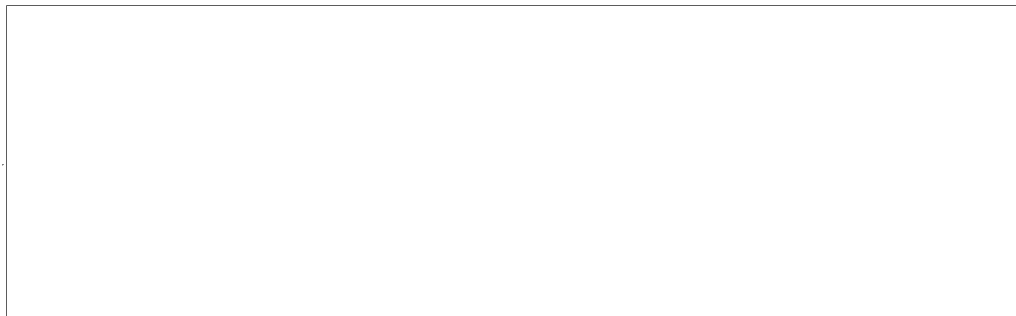
6 May 1967

Submitted By



STAT

STAT




May 1967

Gentlemen:

Our quotation is as follows on one Collimator as indicated in our Dwg. No. 319-67-157, and attached Technical Commentary.

Unit price, one unit-----

STAT

Additional price for system folded with flat mirror-----\$ 

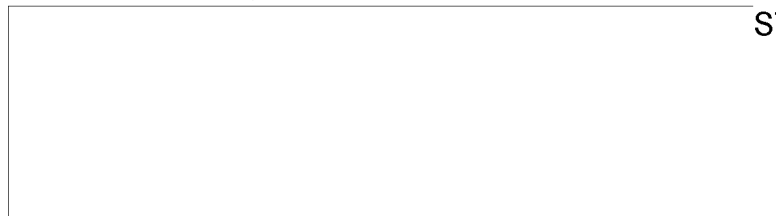
STAT

Delivery will be six (6) months after receipt of order.

Our quotation is effective for 30 days and is subject to the enclosed Standard Conditions of Sales. Our terms are net 30 days, 1/2% discount if paid within 20 days.

Very truly yours,

STAT



EPW/jb  
Encl:

#67-157

STAT

## Technical Commentary

The verbal request suggested a 1.5 to 2 meter focal length f/8 system, either catadioptric or off axis paraboloid, for use with a one inch square format.

We investigated several systems from the point of view of aberrations over the field, compactness, and economy. We assumed that an on-axis system with a beam splitter would be unacceptable.

The types investigated were:

1. Schmidt System: This was regarded as impractical since a large diameter corrector plate would have to be made, and the overall length would have been about twice the focal length. A check on color indicated that the plate should be a doublet for a fairly wide chromatic range general purpose collimator, thus effectively doubling the corrector plate manufacturing problem.
2. Wright Type Schmidt System: Same problem as above except that focal length could be shorter. The color problem is worse, however, and astigmatism severely restricts the field of view.
3. Concentric Type System: Although all the surfaces could be spherical, the elements of the corrector doublet would be very thick and would have to be manufactured with a very large amount of wedge. For optimum correction the system would also have to be considerably longer than the focal length.

4. Null Lens Correcting System: This type of system would be more expensive, have less chromatic range, and have no advantages over a simple off axis paraboloid for this aperture and focal length.

The system we have proposed is a simple off axis section of a paraboloid having a clear aperture of 7.5 inches and focal length of 60 inches, corrected to a  $1/8 \lambda$  ( $\lambda \sim 5461 \text{ \AA}$ ) quality at the center of the field. The resolution will be diffraction limited over the central  $1/8$  inch diameter field with a fall off to 40 l/mm at the edge of a 1" x 1" format and 30 l/mm at the corners.

The original verbal request mentioned compatability with the Beck bench; we are not sure of the exact intention here, but we feel that a collimator of this size more or less has to have its own mount. This can be provided with a stand compatable with other laboratory equipment.

A proposed layout is as shown in Dwg 319-67-;57. As an alternative, the system could be shortened by inserting a flat mirror into the path about 16 inches before the focus and folding the focal plane back to a location nearer the paraboloid. If this were done the total length could be reduced from 78 inches as shown to about 50 inches. The table might have to be slightly wider or have a protusion, depending on the exact location of the focal plane and the size of the light sources to be used, etc.

We have not included light sources or targets in our quotation, but have included a 3 coordinate micrometer stage at the focus.

STAT

May 1967

**CONFIDENTIAL**

*Hank,  
Would you respond  
directly to [redacted] STAT  
on this item*

STAT  
STAT

Subject: Proposal for Off-Axis Collimator

STAT

Enclosed is our proposal for an off-axis collimator. [redacted], while he was still with you, requested that we send this along. He went into no further details.

STAT

Perhaps you know about this; if not, would you be kind enough to look into it for us if it does not involve too much of your time.

Thank you, and kindest regards.

STAT

WB:aq

Enclosure: Proposal for an Off-Axis Collimator

GROUP I  
EXCLUDED FROM AUTOMATIC  
DOWNGRADING AND DECLASSIFICATION

Technical drawing of the optical system showing the target plane, optical axis, and various dimensions. The drawing includes a horizontal line representing the optical axis, with a target plane at the left end. The target plane is labeled "TARGET PLANE" and "1" X 1". The optical axis is labeled "OPTICAL AXIS". The distance from the target plane to the lens is labeled "78\"". The distance from the target plane to the lens is also labeled "60\" EFL". The lens is labeled "OFF AXIS PARABOLA". The lens has a diameter of "7.5\" C.A.". The lens is mounted on a base, which is labeled "4\"". The lens is also labeled "3\"".

G2	G1	ITEM	PART NO.	DESCRIPTION	MATERIAL
REQD.					
SCALE (IND.)			DRAWING	STAT	
ISSUED & QUANTITY					

				LIST		STAT	
ON THIS SIDE OF SHEET ALL BATHS & SHIP EYES SHOULD BE IMMEDIATELY ATTACHED TO FINGER AND FINGER AND FINGER FINGER (IF POSSIBLE)				DATE <u>1-5-66</u> CHECKED VERIFIED		TITLE <u>GO' CFL 18</u> <u>OFF AXIS COLLIMATOR</u>	
MATERIAL:				SCALE		DRAWING NUMBER <u>D 319-51-151</u>	
NEXT ASBY USED ON NEXT ASBY (THAT ASBY) FINISH APPLICATION CITY REGD.				APPROVED <u>CPW</u> UNLESS STATE OTHERWISE		CHECKED BY (SIGNED)	